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| 10/563,461 | 01/05/2006 | Warren Smook | 9031-1017 | 1343 |
| ⁴⁶⁵ YOUNG & THOMPSON 209 Madison Street Suite 500 ALEXANDRIA, VA 22314 | | | ⁷⁵⁹⁰ EXAMINER LEWIS, TISHA D | |
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/563,461

Applicant(s)

SMOOK ET AL.

Examiner

TISHA D. LEWIS

Art Unit

3655

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SF 298)
Paper No(s)/Mail Date ____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date ____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: ____

DETAILED ACTION

The following is a response to the request for reconsideration received on September 2, 2008.

Drawings

The drawings were received on September 2, 2008. These drawings are approved.

Response to Arguments

Applicant's arguments have been fully considered but they are not persuasive. As to applicant's argument that the WO '644 art teaches away from the use of taper roller bearings and the WO '891 art use for taper roller bearings could not be combined with the WO '644 art is acknowledged; however, applicant's arguments against the use of taper roller bearings in the WO '644 art is in fact an argument against the use of taper roller bearings in the present invention. At least in claim 1 of the present invention, the WO '644 art meets every limitation except for the type of bearing used which is the claimed taper roller bearing, now understanding that at the time of filing, the WO '644 art's use of a spherical bearing had an advantage, but the structure as presented in the WO '644 art doesn't suggest that a taper roller bearing couldn't be used and if so, then applicant's present invention wouldn't have an advantage or properly function with the use of a taper roller bearing as claimed (applicant doesn't limit in at least claim 1 what other structure makes the taper roller bearings work better than what was expected in the prior art at the time of filing, i.e., applicant's argument that taper roller bearings could not be used in the WO '644 art due to axial and radial freedom of the planet gear, could

this be a difference in the present invention, etc). Applicant's own disclosure suggest that the structure would work irrespective of the type of bearings used (page 5, lines 13-21 discloses that the support of the planet gears via their bearings on a flexpin shaft can be attained irrespective of whether the bearings are taper, cylindrical and spherical not being excluded). The same response as above would apply to applicant's argument against the prior art WO '690 and WO '566 which again meets the limitations of claim 1 except for the type of bearing used to support the planet gears. WO '891 was used as a secondary art to show that it is well known in the art to use taper roller bearings to support planet gears. Although, as applicant points out, the application for using the taper bearings against a carrier as in WO '891 is different from using the taper bearings with a bogie plate in the WO '644, '690 and '566 arts, it would not be a burden to one of ordinary skill in the art to combine or at least consider the WO '891 art as valid for experimentation in using a taper roller bearing for supporting the planet gears for obtaining an unpredictable result or outcome in the WO '644, '690 and '566 structures.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-5, 7-12, 15 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over WO 02/079644 in view of WO 03/002891 (IDS reference). As to claim 1, WO discloses a sun (14), planet (17) and ring gears (7) and a planet carrier (5),

the carrier has a bogie plate (21) which supports and locates circumferentially spaced planet gear bearings (25) on which the planet gears are mounted. WO doesn't disclose the bearings being taper roller bearings.

WO 891 discloses a planetary gear transmission having a sun (2), planet (6) and ring gear (4) and a carrier (30) wherein planet gear bearings (70) in the form of taper roller bearings are used to support the planet gears.

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the bearings of WO into taper roller bearings in view of WO 891 since it is well known in the art to support planet gears on bearings in general and having taper roller bearings would not change the operation of the WO reference.

As to claim 2, WO discloses the planet gears arranged in axially aligned pairs (17a, 17b are at least two sets).

As to claim 3, WO discloses the bearings (25) supporting the pairs of aligned planet gears.

As to claim 4, WO discloses two pairs of each set positioned on opposite sides of the plate (17a and 17b are on opposite sides of plate 21).

As to claim 5, WO discloses the planet gears being each mounted on a pair of tapered roller bearings (Figure 3, 25 has separate bearings for 17a and 17b).

As to claim 7, WO discloses the bearings being supported by a shaft (19) which self adjust in an angular position relative to the plate.

As to claim 8, WO discloses the bearings for some of the planets being supported on a shaft (not referenced) rigidly secured to the bogie plate.

As to claim 9, WO discloses each shaft rigidly secured to the plate.

As to claims 10, 15 and 16, WO discloses the bogie plate (21) being able to deform elastically (slightly resilient) to allow self adjustment of the angular position of each shaft relative to the axis of rotation of the ring gear.

As to claim 11, WO discloses a main bearing (27) having an inner ring bearing surface (27b) of a diameter greater than that of a toothed surface of the ring gear.

As to claim 12, WO discloses the carrier (5) having a radially extending torque path which is torsionally stiff (due to bolting to hub) but relatively compliant in an axial direction parallel with the axis about which the forces act.

Claims 1-13, 15 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over WO 02/14690 in view of WO 03/002891 (IDS reference). As to claim 1, WO discloses (see Figure 4) a sun, planet and ring gears and a planet carrier, the carrier has a bogie plate which supports and locates circumferentially spaced planet gear bearings on which the planet gears are mounted. WO doesn't disclose the bearings being taper roller bearings.

WO 891 discloses a planetary gear transmission having a sun (2), planet (6) and ring gear (4) and a carrier (30) wherein planet gear bearings (70) in the form of taper roller bearings are used to support the planet gears.

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the bearings of WO into taper roller bearings in view of WO 891 since it is well known in the art to support planet gears on bearings in general and having taper roller bearings would not change the operation of the WO reference.

As to claim 2, WO discloses the planet gears arranged in axially aligned pairs (Figure 4).

As to claim 3, WO discloses the bearings supporting the pairs of aligned planet gears (Figure 4).

As to claim 4, WO discloses two pairs of each set positioned on opposite sides of the plate (Figure 4).

As to claim 5, WO discloses the planet gears being each mounted on a pair of tapered roller bearings (Figure 4).

As to claim 6, WO discloses the tapered roller bearings arranged in an O configuration (claim 21).

As to claims 7 and 13, WO discloses the bearings being supported by a shaft (26 flexpin shaft) which self adjust in an angular position relative to the plate.

As to claim 8, WO discloses the bearings for some of the planets being supported on a shaft (not referenced) rigidly secured to the bogie plate.

As to claim 9, WO discloses each shaft rigidly secured to the plate.

As to claims 10, 15 and 16, WO discloses the bogie plate being able to deform elastically to allow self adjustment of the angular position of each shaft relative to the axis of rotation of the ring gear.

As to claim 11, WO discloses a main bearing having an inner ring bearing of a diameter greater than that of a toothed surface of the ring gear (claim 3).

As to claim 12, WO discloses the carrier having a radially extending torque path which is torsionally stiff but relatively compliant in an axial direction parallel with the axis about which the forces act (claim 6).

Claims 1-13, 15 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over WO 03/014566 in view of WO 03/002891 (IDS reference). As to claim 1, WO discloses (see claim 1) a sun, planet and ring gears and a planet carrier, the carrier has a bogie plate which supports and locates circumferentially spaced planet gear bearings on which the planet gears are mounted. WO doesn't disclose the bearings being taper roller bearings.

WO 891 discloses a planetary gear transmission having a sun (2), planet (6) and ring gear (4) and a carrier (30) wherein planet gear bearings (70) in the form of taper roller bearings are used to support the planet gears.

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the bearings of WO into taper roller bearings in view of WO 891 since it is well known in the art to support planet gears on bearings in general and having taper roller bearings would not change the operation of the WO reference.

As to claim 2, WO discloses the planet gears arranged in axially aligned pairs (claim 2).

As to claim 3, WO discloses the bearings supporting the pairs of aligned planet gears (claim 2).

As to claim 4, WO discloses two pairs of each set positioned on opposite sides of the plate (claim 3).

As to claim 5, WO discloses the planet gears being each mounted on a pair of tapered roller bearings (claim 19).

As to claim 6, WO discloses the tapered roller bearings arranged in an O configuration (claim 27).

As to claims 7 and 13, WO discloses the bearings being supported by a shaft (26 flexpin shaft) which self adjust in an angular position relative to the plate (claim 4).

As to claim 8, WO discloses the bearings for some of the planets being supported on a shaft (Figure 4) rigidly secured to the bogie plate.

As to claim 9, WO discloses each shaft rigidly secured to the plate (Figure 4).

As to claims 10, 15 and 16, WO discloses the bogie plate being able to deform elastically to allow self adjustment of the angular position of each shaft relative to the axis of rotation of the ring gear (claims 1 and 4).

As to claim 11, WO discloses a main bearing having an inner ring bearing of a diameter greater than that of a toothed surface of the ring gear (claim 10).

As to claim 12, WO discloses the carrier having a radially extending torque path which is torsionally stiff but relatively compliant in an axial direction parallel with the axis about which the forces act (claim 13).

Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over WO 644 in view of WO 891 as applied to claim 1 above, and further in view of WO 02/14690 and WO 03/014566. WO 644 in view of WO 891 disclose taper roller bearings, but does not disclose the configuration in which the bearings are disposed.

Both WO 566 and WO 690 disclose having taper roller bearings disposed in an O configuration.

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the bearing configuration of WO 644 in view of WO 891 and further in view of both WO 566 and WO 690 references to minimize overhung loads on the planet components

Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over WO 644 in view of WO 891 as applied to claim 1 above, and further in view of WO 690 and WO 566). WO 644 in view of WO 891 disclose the planet gears supported to the bogie plate by a shaft, but does not disclose the shaft being of a flexpin.

Both WO 566 and WO 690 references disclose a shaft (26) being of a flexpin operation due to flexing of component (33).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the shaft (19) of WO 644 in view of WO 891 and further in view of both WO 566 and WO 690 references to isolate axial forces from the planet gears during operation.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to TISHA D. LEWIS whose telephone number is 571-272-7093. The examiner can normally be reached on M-F 9:30AM TO 6:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, CHARLES A. MARMOR can be reached on 571-272-7095. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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Tdl
/TISHA D. LEWIS/
Primary Examiner, Art Unit 3655
December 8, 2008